

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
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1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE August 99		3. REPORT TYPE AND DATES COVERED Final Report: 23 Aug 96 thru 30 Nov 96
4. TITLE AND SUBTITLE  Conventional Weapon Automatic Target Recognition			5. FUNDING NUMBERS	
6. AUTHOR(S)  Gary A. Maddux				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  Univ. of Alabama in Huntsville Huntsville, AL 35899			8. PERFORMING ORGANIZATION REPORT NUMBER  5-34530	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)  AMSAM-RD-SE-MT (D. HOLDERFIELD) U.S. Army Aviation & Missile Command Redstone Arsenal, AL 35898			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT  Approved for Public Release; Distribution is unlimited.			12b. DISTRIBUTION CODE  A	
13. ABSTRACT (Maximum 200 words) <p>The Missile Research, Development, and Engineering Center recently conducted a preliminary investigation of manufacturing technology issues related to Detection, Discrimination and Classification of Targets in Clutter. These new technologies can lead to applications that will significantly improve the performance of missile and other DoD weapon systems. The Systems Engineering and Production Directorate has the mission and function of evaluating new technologies and determining the impacts of same on the producibility and supportability of MICOM missile systems. SEPD required engineering support in performing assessments on the above technologies. The Systems Management and Production Laboratory at The University of Alabama in Huntsville (UAH) Research Institute (RI) was tasked to provide this engineering support and analytical capability.</p>				
14. SUBJECT TERMS  automatic target recognition			15. NUMBER OF PAGES 2	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

19991004 038

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Gary A Maddux 25 Aug 99  
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256 890 6343 x 223

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Technical Report 5-34530  
Contract No. DAAH01-92-D-R006  
Delivery Order No. 111

**Conventional Weapon Automatic Target Recognition  
(5-34530)**

Final Technical Report for Period  
23 August 1996 through 30 November 1996

August 1999

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Prepared for:

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## PREFACE

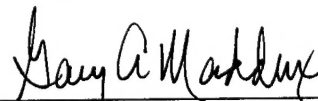
This technical report was prepared by the staff of the Research Institute, The University of Alabama in Huntsville. The purpose of this report is to provide documentation of the work performed and results obtained under Delivery Order 111 of MICOM Contract No. DAAH01-92-D-R006. Mr. Gary Maddux was the principal investigator. Mr. Daron Holderfield, Manufacturing Technology Division, Systems Engineering and Production Directorate, Research, Development, and Engineering Center, U.S. Army Missile Command, provided technical coordination. Technical expertise and insights in automatic target recognition was provided by Mr. William Pittman, Missile Guidance Directorate, Research, Development, and Engineering Center, U.S. Army Missile Command.

The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision unless so designated by other official documentation.

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Prepared for: Commander  
U.S. Army Missile Command  
Redstone Arsenal, AL 35898

I have reviewed this report, dated August 1999 and the report contains no classified information.

  
Principal Investigator

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## **1.0 Introduction**

The Missile Research, Development, and Engineering Center recently conducted a preliminary investigation of manufacturing technology issues related to Detection, Discrimination and Classification of Targets in Clutter. These new technologies can lead to applications that will significantly improve the performance of missile and other DoD weapon systems.

The Systems Engineering and Production Directorate has the mission and function of evaluating new technologies and determining the impacts of same on the producibility and supportability of MICOM missile systems. SEPD required engineering support in performing assessments on the above technologies. The Systems Management and Production Laboratory at The University of Alabama in Huntsville (UAH) Research Institute (RI) was tasked to provide this engineering support and analytical capability.

## **2.0 Objective**

The purpose of this research task was to review research progress in automatic target recognition, non-cooperative target recognition, and battlefield combat identification, for potential technology insertion in current tactical and strategic weapons as well as for new systems. UAH conducted research to identify and categorize emerging technologies based on the potential for DoD weapons applications and manufacturing technology maturity.

## **3.0 Statement of Work**

The statement of work, as outlined in delivery order 111, was as follows:

UAH shall provide the personnel, resources, expertise and materials required to perform the following efforts:

- 3.1 UAH shall conduct research to identify and categorize emerging technologies based on the potential for DoD weapons applications and manufacturing technology maturity.
- 3.2 UAH shall perform analysis on the emerging technologies and testing processes to support targeting systems. Literature searches and evaluation of previous DoD research efforts shall be performed.
- 3.3 The Government will host a DoD workshop, 13-14 Nov. 96, at the Sparkman Center Auditorium, Redstone Arsenal, Alabama to facilitate technical information exchange. UAH shall participate in the selection process of the topics to be presented.

#### **4.0 Description of Workshop**

The work performed on this task led directly to the Workshop on Automatic Target Recognition, which was held at the Sparkman Center Auditorium on 13-14 November 1996. The objective of this workshop was to review the progress of these technologies applicable to DoD weapon systems.

#### **5.0 Conclusion and Recommendations**

During the time frame allocated by the delivery order, members of the UAH Applied Research Program, with the cooperation of representatives from MICOM SEPD and Missile Guidance, performed an analysis and evaluation of conventional weapon automatic target recognition. Results of these efforts were presented at a locally held workshop. Detailed findings can be found in the proceedings of that workshop, which was compiled by UAH and delivered under separate cover.